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**Remarks**

Although the previous amendments overcome some of the rejections under 35 USC §112, the Examiner maintained his rejections because of the language "without equilibration". Applicants amended all claims to obviate these rejections and note that the claim language of "without equilibration" has been removed.

The Examiner rejected claims 20, 21, and 24-26 under 35 USC §103 as being obvious unpatentable over EP 1 037 041 A2 ("041 patent") in view of U.S. Patent No. 4,272,353 to Lawrence or U.S. Patent No. 6,319,293 to Debe et al. Based on the foregoing amendments and following remarks, Applicants submit all claims should be allowed.

As amended, all claims relate to an ionomer membrane that is dry during the steps of providing the at least one opening in the substrate, placing the electrode proximate to the at least one opening, and contacting the dry ionomer membrane to the substrate and electrode.

The previous office action states that the '041 patent never specifies whether the membrane is wet or dry during sensor construction and the office action appears to rely upon the other references to infer a membrane that is dry during sensor construction. However, as shown below, neither Debe nor Lawrence teaches or suggests an ionomer membrane that is dry during the steps of providing the at least one opening in the substrate, placing the electrode proximate to the at least one opening, and contacting the dry ionomer membrane to the substrate and electrode.

As stated in paragraph 7 of the Final Office Action and paragraph 9 of the previous office action, Debe discloses that the pretreatment of the membrane may be avoided ("...even without solvent pretreatment of the membrane"). Col. 25, lines 20-25.

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However, Applicants submit that this pretreatment is a second pretreatment after the membrane has undergone a first pretreatment. In other words, the membrane is first wetted in boiling water (first pretreatment) and then followed by an optional second pretreatment. The above description in Debe and paragraph 9 of the previous office action that the soaking may be dispensed with is directed to the latter pretreatment step.

Support may be found beginning at col. 21, line 22, which states "there are a number of basic processes and materials common to all the examples. These include the preparation of the nanostructured catalyst support, application of the catalyst to the support, determination of the catalyst loading, fabrication of the membrane-electrode assembly,...These are defined in general as follows:" Following this statement of the commonality of all examples, Debe further states "Before use, the Nafion membrane was pretreated by sequentially immersing into a)boiling water for one hour, b)boiling 3% H<sub>2</sub>O<sub>2</sub> for one hour, c) boiling ultra pure H<sub>2</sub>O for 1 hour, d)boiling .5M H<sub>2</sub>SO<sub>4</sub> for one hour,...The Nafion was then stored in ultrapure DI water until use...Unless otherwise noted below, the Nafion membrane was further pretreated prior to attachment..." Col. 22, line 65-col. 23, line 10 (emphasis added).

It is important to point out that the dispensing of the pretreatment step set forth in paragraph 9 of the previous office action is in example 6, which was after the description of the commonality of all the examples and after the statement of "unless otherwise noted below, the Nafion membrane was further pretreated prior to attachment..." Col. 23, lines 1-10. Hence, the second pretreatment that is dispensed with in example 6 does not affect the first pretreatment step that is still performed on the membrane.

With regard to Lawrance, although it discloses that the membrane is wetted after the catalyst is attached to it, Lawrance does not teach or suggest that the membrane is

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dry during the steps of providing the at least one opening in the substrate or placing the electrode proximate to the at least one opening, as claimed by Applicants.

Lawrance does not relate to an opening in the substrate or placing the electrode proximate to the opening at all and, therefore, cannot relate to the membrane being dry during these operations.

Even assuming that the '041 reference discloses the opening in the substrate and placing the electrode proximate to the opening, and Applicants are not making such a concession, Lawrance does not suggest that the membrane is dry during these two steps simply by stating the electrode and membrane are affixed together prior to wetting.

A prima facie case of obviousness requires that the Examiner show that the proposed combination teaches all of the claimed elements, that there is motivation for the combination, and that there is a reasonable expectation of success for the combination. Because no reference alone or in any combination with one another relates to an ionomer membrane that is dry during the steps of providing the at least one opening in the substrate, placing the electrode proximate to the at least one opening, and contacting the dry ionomer membrane to the substrate and electrode, the proposed combination cannot include these limitations. When no reference refers to such claimed features, the motivation to combine the stated references in a manner to include Applicant's claimed feature is also absent. The reasonable expectation of success prong is moot given the failure of the "all-elements" and motivation prongs.

Because there is no disclosure, teaching, or suggestion in any reference to provide an ionomer membrane that is dry during the steps of providing the at least one opening in the substrate, placing the electrode proximate to the at least one opening, and contacting the dry ionomer membrane to the substrate and electrode, the combina-

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tion of Lawrance, Debe, and the '041 reference does not arrive at Applicants' claimed invention without some modification to the combination.

Even assuming that somehow the cited references may be combined, in order for a reference to be properly modified in a rejection under 35 USC §103, there must be some teaching or suggestion to make the modification. Without some teaching or suggestion, one skilled in the art lacks the motivation to make the modification. As discussed above, all of the references lack a teaching or suggestion for an ionomer membrane that is dry during the steps of providing the at least one opening in the substrate, placing the electrode proximate to the at least one opening, and contacting the dry ionomer membrane to the substrate and electrode. It can hardly be argued or presumed that these limitations would be obvious in view of such opposite teachings.

Based on the foregoing, Applicants' submit that all claims are allowable and that all rejections be withdrawn.

Respectfully submitted,



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